Claims

1. An arrayed waveguide grating, comprising :

one or more optical input waveguides arranged side by side;

a first slab waveguide connected to an output side of this optical input waveguides;

an arrayed waveguide connected to an output side of the first slab waveguide and constructed by a plurality of channel waveguides arranged side by side and having lengths different from each other by a set amount;

a second slab waveguide connected to an output side of the arrayed waveguide; and

a plurality of optical output waveguides connected to an output side of the second slab waveguide and arranged side by side;

the arrayed waveguide grating being characterized in that an input end of said optical input waveguides is terminated on a first end face of the arrayed waveguide grating, and an output end of said optical output waveguides is terminated on a second end face opposed to said first end face of the arrayed waveguide grating, and at least one of said first and second slab waveguide is separated on a separating face crossing an optical path passing through the slab waveguide and formed a separating slab waveguide, and the arrayed waveguide grating further

comprises a center wavelength shift mechanism for shifting each center wavelength of transmitting light of the arrayed waveguide grating by sliding and moving at least one side of said separating slab waveguide along said separating face in accordance with a temperature.

2. An arrayed waveguide grating according to claim 1, wherein a longitudinal direction of the first end face, a longitudinal direction of the second end face and a longitudinal direction of the separating face are set to be approximately parallel to each other.

3. An arrayed waveguide grating according to claim 1, wherein the separating face is set to a face perpendicularly crossing a central axis of the slab waveguide in its light advancing direction.

4. An arrayed waveguide grating according to claim 1, wherein the separating face is set to a face slantingly crossing a central axis of the slab waveguide in its light advancing direction, and a smaller angle among angles formed between said separating face and the central axis of said slab waveguide in its light advancing direction is set to be equal to or smaller than 83°.

5. An arrayed waveguide grating according to claim 1, wherein the center wavelength shift mechanism is constructed by sliding and moving the separating slab waveguide in the reducing direction of a temperature dependence variation of each center wavelength of

transmitting light of the arrayed waveguide grating.

6. An arrayed waveguide grating according to claim 5, wherein the center wavelength shift mechanism has a substance thermally expanded and contracted in accordance with a temperature changing amount by an amount according to a shift amount of the center wavelength of transmitting light shifted in accordance with said temperature changing amount of the arrayed waveguide grating .

7. An arrayed waveguide grating according to claim 1, wherein the arrayed waveguide grating is formed on a substrate face, and the substrate forming this arrayed waveguide grating is separated into a first substrate having a separating face conformed to the separating face of the separating slab waveguide and forming one side of the arrayed waveguide grating with the separating face of the separating slab waveguide as a boundary, and a second substrate forming the other side of the arrayed waveguide grating similarly with the separating face as a boundary, and a high thermal expansion coefficient member having a coefficient of thermal expansion greater than that of the substrate is arranged along a moving side substrate face in a moving side substrate on one side of these first or second substrate by setting a longitudinal direction of the high thermal expansion coefficient member to a slide direction of the separating face of said separating slab waveguide, and a center wavelength shift mechanism

containing the high thermal expansion coefficient member as a constructional element is formed by fixing a base end side of this high thermal expansion coefficient member to a fixing portion and fixing a thermal expansion-contraction moving side of the high thermal expansion coefficient member to said moving side substrate, and the center wavelength shift mechanism slides and moves one side of the separating slab waveguide along said separating face with respect to the other side of the separating slab waveguide by a thermal expansion-contraction movement of the high thermal expansion coefficient member.

8. An arrayed waveguide grating according to claim 7, wherein the first and second substrates are mounted onto a base face, and the high thermal expansion coefficient member is arranged between the base face and a lower face of the moving side substrate on one side of the first or second substrate, and a base end side of the high thermal expansion coefficient member is fixed to the base as a fixing portion, and the substrate on the other side among the first and second substrates is fixed to said base through a low thermal expansion coefficient member arranged on a lower face side of this substrate on the other side, and a coefficient of thermal expansion of the low thermal expansion coefficient member is set to be approximately equal to that of the base.